

Notice of Allowability

Application No.

09/812,027

Applicant(s)

SHIVKUMAR ET AL.

Examiner

James M. Mitchell

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/2/2005.
2. ☒ The allowed claim(s) is/are 1 and 14.
3. ☒ The drawings filed on 23 March 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Carl Whitehead, Jr.
CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

DETAILED ACTION

This office action is in response to the amendment filed May 2, 2005.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kourosh Salehi on May 10, 2005. The amendment was provided to overcome newly found art.

The application has been amended as follows:

CLAIMS

- Cancel claims 11, 13 and 19-22.

In claim 1, line 3 after “; a” insert- - first- -;

in line 4 after “least” delete “first and second”, and after “said” delete “first and second”;

in line 5 after “electrodes” delete “having contacts” and after “surface” insert- -each- -

and after “to” insert - -a- - and after “respective” delete “ones of said” and after

“respective” insert- -via- -;

in line 6 delete "plurality of vias";

in line 7 after "least" delete "first and second", and after "said" delete "first and second";

in line 8 after "electrodes" delete "of said second die" and after "electrodes" insert- - on
said second die bottom surface each- - and after "to" insert- -a- - and after "respective
"delete "ones of said plurality of vias" and insert- -via- - and after "; and a" insert - -first
and second- -;

in line 9 after "conductive" delete "electrode" and insert- - electrodes- -, and after "over
the" delete "upper most" and insert - - top- -;

in line 11 after "vias" insert - -wherein the first and second electrodes are insulated from
one another by an insulation dam that is in contact with vertical side surfaces of the
electrodes - -.

Allowable Subject Matter

Claims 1 and 14 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art does not disclose or make obvious a MCM device wherein first and second chips have first and second moldable conductive electrodes on its top and bottom surfaces extending over an upper surface of the chip that has electrodes formed thereon with the

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electrodes further connected to vias extending in the substrate wherein the electrodes are separated from one another by an insulation dam that is in contact with vertical side surfaces of the electrodes.

Although conductive material/electrodes are known in the art to be connected to a portion of the substrate and in contact to an upper surface of a chip as shown for example in Distefano (U.S. 6,354,485), and the use of dams and conductive material is known as shown for example in Glenn (U.S. 6,268,654), the prior art does not show or make obvious insulating first and second electrodes from one another by an insulation dam that is in contact with vertical side surfaces of the electrodes.

In contrast, for example Glenn MCM shows a conductive member supported by a dam, where the dam neither separates a first and second conductive member, nor is in contact with vertical side surfaces of the conductive member.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses in: Mitchell (U.S 6,602,740) the use of conductive material supported by insulating material (i.e. dam); Nakumura (U.S. 6,054,759), Ruby (U.S. 5,061,686), Kajiwara (U.S 6,774,466) and Kajiwara '778

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(JP2001210778) the use of an electrode formed on the top surface of a component and in contact with a substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
May 10, 2005


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